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IN THE

Supreme Court of the United States

OCTOBER TERM, 1961.

No. 184

FLOYD A. FIRESTONE,

Petitioner,

AND

SPERRY PRODUCTS, INC., AND UNITED AIRCRAFT CORPORATION,

Involuntary Petitioners,

vs.

ALUMINUM COMPANY OF AMERICA, ELECTRO-CIRCUITS, INC., AND CURTISS-WRIGHT CORPORATION,

Respondents.

RESPONDENTS' REPLY BRIEF IN OPPOSITION TO PETITION FOR THE WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SIXTH CIRCUIT.

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THE DONNELLEY-SAXTON PRINTING COMPANY, CHICAGO

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RESPONDENTS' REPLY BRIEF IN OPPOSITION TO PETITION FOR THE WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SIXTH CIRCUIT.

INTRODUCTION.

The Petitioner here seeks a review of a Judgment of the United States Court of Appeals for the Sixth Circuit holding invalid claims 16, 19, 20, 25, 26, 29 and 32 of the

Firestone Patent No. 2,398,701 (855a)*. The patent involved is one of a series of four patents all of which relate to applications of a principle that was old and well known prior to any invention of the petitioner, Dr. Firestone. That principle consists of the electronic timing of ultrasonic waves (sound waves of too high a frequency to be audible) created by an electrically vibrated crystal, from the point of their creation to a point of interruption where they are "echoed" back to the crystal. This principle was widely utilized in the prior art for under-water depth charting and for the location and determination of the distance to submerged objects such as submarines. The same principle has long been utilized with audible sound as in navigation, where the time of return of echoes from the blasts of a steamboat whistle furnished accurate information as to the distance of the ship from a precipitous shore line.

It was also well known prior to Firestone that ultrasonic waves are capable of penetrating solid objects as well as water and that echoes thereof are returned to the source whenever the waves encounter a discontinuity, as for example, upon entering or leaving a solid object or passing through a flaw or discontinuity therein.

In the light of such a background Dr. Firestone was awarded Patent No. 2,280,226 (847a—Referred to as the "No. 1" patent) on April 21, 1942. Although that patent discloses an old combination of admittedly commercially available electronic elements, the Courts below held claims 2, 3, 4, 10 and 11 thereof valid on the basis of their specifying a *function*—"the interior inspection, exploration, or measurement of a solid part whose maximum dimension is of the order of 10 feet or less" ("an inch" is specified in claims 10 and 11).

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* Frequently referred to in the record and in the Opinions below as the "No. 2" patent.

Patent No. 2 (847a) resulted from an application *filed* on June 29, 1942, *more than two months after the issuance of Patent No. 1*, so that Patent No. 1 is clearly a part of the prior art of Patent No. 2.

Patent No. 2 issued on April 16, 1946. Thus Petitioner here seeks to prolong the broad functional monopoly accorded to Patent No. 1 by the Courts below for a period of four years.*

Petitioner's "questions" are incomplete. None of the questions sets forth enough relevant facts to justify a legal conclusion contrary to that reached by the Court of Appeals. Moreover, the questions assert facts contrary to the record.

The Petition is inaccurate in other respects. It alleges that a statement in the opinion of the Court of Appeals constitutes a reversal of a finding of fact, where that statement sets forth a fact not even considered by the District Court but which is amply proved by documentary evidence in the record. It alleges that the Court of Appeals committed "grave scientific error" on the basis of a scientifically unsound argument of Petitioner, requiring the assumption of facts which are not supported in the record and would not be accepted by any scientist without proof. It alleges the existence of a "revolutionary discovery" where there is nothing in the record to support such a conclusion, and the record contains contradictory statements of Petitioner himself as to the results achieved by his apparatus.

The finding of invalidity of the above identified claims of Patent No. 2,398,701 by the Court of Appeals for the Sixth Circuit reversed the District Court's Judgment in such respect. A brief examination of the record shows

* Such was the result of the Judgment of the District Court which was reversed in such respect by the Judgment of the Court of Appeals.

that, on this issue, the Court of Appeals carefully considered all of the evidence, gave due weight to the findings of the District Court and properly applied the law. In addition, the issue presents no new question of law or policy requiring exposition by this court.

STATEMENT OF THE CASE.

The Court of Appeals, after affirming the District Court's finding of validity of Patent No. 1 in suit (Patent No. 2,280,226, 847a), found the claims in question of the No. 2 patent (Patent No. 2,398,701, 855a), to be invalid over Patent No. 1 which was issued prior to the filing date of Patent No. 2.

Claims 16, 19, 20, 25, 26, 29 and 32 of Patent No. 2 are involved.

Claims 19 and 32 are directed to damping means engaged with the rear face of a quartz plate (the crystal which produces the ultrasonic waves) having its front face engaged with a metal part under test. The quartz plate is electrically vibrated to send bursts, wave trains or pulses of high frequency sound waves (ultrasonic or supersonic waves) into the part, an operation which is disclosed in Patent No. 1. The alleged invention is in the use of the damping means engaged with the quartz plate or crystal to absorb vibrations and to limit the duration of the vibrations, in the same way as one might grasp a vibrating bell or crystal goblet with the hand to damp the vibrations thereof.

Claims 16, 25 and 29 are directed to the use of a heterodyne amplifier to amplify weak echo signals produced by the crystal in response to reflections of the bursts or pulses of ultrasonic waves from flaws or discontinuities within the metal part. The No. 1 patent shows a rectangle labelled "AMPLIFIER", and describes it as "preferably of the wide range type giving approximately uniform am-

plification from 1,000 to 10,000,000 cycles per second", but does not describe the type of amplifier used.

Claims 20 and 26 are directed to a combination of the damping and heterodyne amplifier features.

The No. 1 patent, a valid reference against the No. 2 patent, shows a complete pulse-echo system including the crystal and amplifier operating in the same way and performing the same function as in the No. 2 patent. Other references in the art show crystal damping and heterodyne amplifiers. Crystal damping is shown in the Round Patent No. 1,732,029 (DX K-5, 1031a), the Sawyer Patent No. 2,105,010 (DX E-14, 969a) and British Patent No. 473,636 (DX E-29, 987a). Heterodyne amplifiers in pulse-echo apparatus are shown in both the Harrison Patent No. 2,433,361 (DX K-12, 1069a) and the Wiseman Patent No. 2,491,540 (DX K-15, 1105a).

The Court of Appeals held that the use of crystal damping and the heterodyne amplifier did not constitute invention over the No. 1 patent, and that the results achieved were not unobvious but a refinement such as any one skilled in the art might achieve from the No. 1 patent.

Petitioner attempts to create the impression that the results attained by crystal damping and the heterodyne amplifier are revolutionary in character. However, the only evidence in the record in such respect consists of statements of Petitioner Firestone himself and even such statements are contradictory in character.

As to measurement of thickness with the apparatus of Patent No. 1, Firestone represented to the Patent Office that the patent disclosure taught how to measure a 1/16 inch steel plate (913a).

As to detection of flaws with the No. 1 patent, Firestone said "approximately a half an inch, or inch, perhaps". —"Depending on frequency in use" (186a).

As to measurement of thickness with the apparatus of Patent No. 2, the patent mentions measurement of a one-sixteenth inch plate, and as to detection of flaws, it mentions one-half inch (860a, col. 1, lines 22-27).

Thus it appears questionable whether the use of damping and the heterodyne amplifier resulted in any improvement at all over the operation which Petitioner himself *represented* was taught in Patent No. 1.

ARGUMENT.

Petitioner urges that the claims should be held valid because it would operate in the public interest to stimulate invention. It is also in the public interest to prevent patentees from illegally extending their monopoly through patents on alleged improvements, such as anyone skilled in the art might develop from the disclosures of the prior art.

Petitioner also urges in effect that a more lax standard of invention be applied in complex electronics cases and the like. If this case falls into that category, a more rigid standard should be applied since the radio and electronics field is highly developed and a person having a normal skill in that art has a higher degree of skill than in other arts.

I.

The Court of Appeals Did Not Reverse Any Finding of Fact But Considered All Relevant Facts Including Documentary Evidence to Which the District Court Made No Reference. It Then Properly Applied the Law to Such Facts.

In his first question and supporting argument, Petitioner asserts that the Court of Appeals reversed a finding of fact, declined to examine the facts and deferred instead to the judgment of an adverse witness. Actually, however, the Court of Appeals did not reverse any finding of fact, and it considered all relevant facts including documentary evidence to which the District Court made no reference.

In particular, at page 12a of the Appendix to Petitioner's Brief, the opinion of the Court of Appeals states that "It is known that crystal damping was in use before Dr. Firestone's adaptation of it in Patent No. 2 (Fishleigh 325a)". Petitioner alleges that this constitutes a reversal of a finding of fact, and that in making the statement the Court of Appeals declined to examine the fact and deferred instead to the judgment of an adverse witness. However, the District Court made no finding that crystal damping was new in the art and its findings (793a-794a) are restricted to the Sokolov 1935 publication (DX K-36, 1199a), the Hayes Patent No. 2,424,030 (DX K-10, 1053a) and the Bond-Mason Patent No. 2,427,348 (DX K-11, 1063a). The District Court made no reference whatever to the Round Patent No. 2,732,029 (DX K-5, 1031a), the Sawyer Patent No. 2,105,010 (DX E-14, 969a) or the British Patent No. 473,636 (DX E-29, 987a), specifically referred to by the Court of Appeals. All of these patents show clearly that crystal damping was old and well known in the art.

The Court of Appeals considered other documentary evidence to which the District Court made no reference in connection with this issue. At page 13a of the Appendix to Petitioner's Brief, the opinion refers specifically to the file history of Patent No. 2 and to the claim of Petitioner that he had invented a means for detecting flaws in metal closer to the surface within one-half inch. At pages 13a-14a, the opinion refers to statements made by Petitioner to the Patent Office in connection with Patent No. 1, and to statements made concurrently in a letter to Edwin D. Eaton (PX 53, 879-880a). The Court of Appeals also took into consideration the testimony of Petitioner and at pages 12a-13a not only refers to but quotes at length the testimony of Petitioner as to the heterodyne amplifier feature and as to the effect of the combination of the heterodyne amplifier with the damping means. At page

16a, the Court of Appeals specifically refers to and quotes the testimony of petitioner and his statements in his No. 2 patent, which are contradictory as to the results achieved.

The opinion of the Court of Appeals also summarized the applicable law and concluded that there was no invention in using an old type of amplifier and the known expedient of crystal damping to produce a difference in result of degree only. This conclusion is based upon a consideration of all pertinent evidence, *including evidence not referred to by the District Court*. We submit that the conclusion of the Court of Appeals is proper.

II.

Invention Cannot Be Predicated Upon Discovery of a Property of an Admittedly Old Element. Even If Such Were the Case the Record Here Does Not Support Petitioner's Claim.

Petitioner's second question asserts that the Court of Appeals failed to follow the standard of invention of Section 103 of the Patent Act of 1952 because it failed to find invention in the discovery of a *property* of an admittedly old element—the heterodyne amplifier. As pointed out below, Dr. Firestone made no such discovery. Assuming *arguendo* that he did, there is nothing in Section 103 of the 1952 Patent Act which purports to change in any way the principle laid down by this Court in *Ansonia Brass & Copper Co.* v. *Electrical Supply Co.*, 144 U. S. 11; 18 that "the application of an old process to a new and analogous purpose does not involve invention even if the new result had not before been contemplated." This principle was held fully applicable to an article claim in *General Electric Co.* v. *Jewel Incandescent Lamp Co.*, 326 U. S. 242-248. There is nothing contained in Section 103 nor

in the legislative history leading to the enactment thereof which even suggests a deviation from this established principle.

Regarding Petitioner's argument as to discovery of a new property, the District Court made no finding, but the argument in its decision (796a-797a) strongly supports our position and the position of the Court of Appeals that the alleged new property was not new in the depth sounding or pulse-echo art, to which the claims of Patent No. 2 relate. Contrary to inferences in Petitioner's argument *the claims are not limited to the flaw detection art.*

Petitioner did not discover a new property, but merely used a new term, "blocking", to apply to the effect of a lack of resolving power, a characteristic of pulse-echo system amplifiers which was known and recognized in the art long prior to Petitioner.

The prior art teaches that the ability of an amplifier in a pulse-echo system to distinguish one pulse from another pulse received shortly therebefore is increased by reducing certain time constants in the amplifier or by increasing certain band width characteristics. For example, the Verman *et al.* publication of July, 1934 (DX K-25, 1163a) discusses the reduction of time constants to increase resolving power. The Wireless World publication of July, 1938 (DX K-38, 1221a) discusses increasing band width to increase resolving power. The Harrison Patent No. 2,433,361 (DX K-12, 1069a) points out at lines 5-10 of Column 9 (1077a) that an increased band width is obtained in a heterodyne amplifier by using a high intermediate frequency.

Petitioner merely described an amplifier as being "blocked" following an initial pulse and pointed out that the "blocking time" is decreased by using a high intermediate frequency. He taught nothing that was not taught

in the prior art. His only claim to novelty lies in the use of new words.

We thus have a situation where Petitioner discovered no new "property" of the admittedly old heterodyne amplifier. Even had such a property been discovered such discovery would not, under the controlling authorities, have constituted patentable invention.

III.

The Court of Appeals Did Not Reverse the District Court as to a Finding of Fact. It Did Arrive at a Different Conclusion on the Basis of That Fact as Viewed in the Light of Admissions of Petitioner.

As under Question II, Petitioner relies upon the alleged discovery of a "hitherto unknown property" of a basic electronic element of the admittedly old heterodyne amplifier. This was answered in the preceding section wherein we pointed out that:

(a) Petitioner made no discovery of any new property of the heterodyne amplifier; and

(b) That, under the law as laid down by the Court, such a discovery of a property inherent in a known element does not involve invention.

Petitioner complains that the Court of Appeals reversed the District Court as to a finding of fact. As we understand the opinion of the Court of Appeals, it involved no reversal of any finding of fact. The Court of Appeals, after giving full consideration to the findings of fact made by the District Court correctly concluded* as follows: (15a; 16a).

"Here the claims in suit involve a heterodyne ampli-

* In such respect the application of correct legal criteria to the factual determinations made by the trial court is clearly subject to review by an appellate tribunal as a question of law. *Great*

fier which is old, damping of the crystal which was previously known and a combination of the two which resulted in detecting flaws closer to the surface than could be done with patent No. 1. The parts performed the same function and operated in the same way as they did in the original patent. The difference in result was one of degree. It was only a refinement such as one skilled in the art could have achieved from the disclosures of the first patent. This is not invention."

As authority for the above quoted conclusion, the Court of Appeals (15a) cited *Dunbar* v. *Myers*, 94 U. S. 187, 199; *Smith* v. *Nichols*, 88 U. S. 112 and other applicable cases in support of the well established principle of patent law that a new application of an old device is not patentable even though the result secured is a better one.

The third question is incomplete. Even if the asserted facts were assumed to be true, which they are not, there are not enough relevant facts set forth as to require a conclusion contrary to that reached by the Court of Appeals.

The Court of Appeals did not reverse any finding of fact of the District Court, nor did it commit any scientific error. Although there is little in the record to support it, the Court of Appeals upheld the District Court in finding that the use of a damped crystal and an amplifier of the heterodyne type "resulted in detecting flaws closer to the surface than could be done with Patent No. 1."* This could hardly be considered a reversal of a finding of "utility" as contended by Petitioner. After making this finding, favorable to Petitioner, the Court of Appeals considered evidence which was not considered by the District

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Atlantic & Pacific Tea Co. v. *Supermarket Equipment Co.*, 340 U. S. 147; *Armour & Co.* v. *Wilson & Co.*, 274 F. 2d 143, 156 (C. A. 7, 1960).

* As pointed out previously the results claimed show no advantage over the results Firestone claimed to have secured with the apparatus of the No. 1 patent.

Court, and concluded that the improvement of Petitioner was one of degree and not invention.

In particular, the Court of Appeals considered Petitioner's statements to the Patent Office (913a) and at the trial (186a) as to the results achieved with the apparatus taught in Patent No. 1, and also considered Petitioner's statements as to the results achieved with the apparatus of Patent No. 2 (860a, Column 1, lines 22-29). These admissions of Petitioner were not considered in the opinion of the District Court on the issue here involved (792a-798a).

Petitioner contends that "The Appellate Court relied upon a portion of a statement of Dr. Firestone taken out of context as proof that the flaw detecting capabilities of Patents Nos. 1 and 2 were identical.", and refers to testimony of Firestone with respect to a qualification as to frequency. Actually, the Court of Appeals did not find that the capabilities of the two patents were identical, but found the apparatus of Patent No. 2 to be an improvement over that of Patent No. 1. Be that as it may, however, Petitioner's argument as to the frequency qualification is not supported in the record.

Patent No. 1 gives as an example an operating frequency of 1,000,000 cycles per second and mentions the possibility of operating at frequencies up to 50,000,000 cycles per second. Patent No. 2 gives as an example an operation at 5,000,000 cycles per second and sets no upper limit on the frequency of operation. From the disclosures of the patents and the statements and testimony of Petitioner, it is not possible to tell what relative effects are produced by changes in the frequency of operation, the use of a crystal with high damping or the use of a heterodyne amplifier. There is no evidence whatever to show that the use of a crystal having high damping or the

use of a heterodyne amplifier would be desirable at low frequencies. Petitioner refers to a statement taken out of context from the testimony of William C. Hitt (453a) that the detection of flaws in dry propellant used in missiles requires a very low frequency for penetration. Reference to the testimony shows that Hitt was talking about a UW instrument, and there is no evidence in the record to show whether the UW instrument uses a heterodyne amplifier or whether it uses a crystal having high damping when operating at low frequencies. Indeed, it would appear undesirable to use a damped crystal in conjunction with a dry propellant, since the output of the crystal would be decreased under circumstances where a high penetration is required. Petitioner's argument is not only without support, but appears to be scientifically unsound.

In reality, the finding of the Court of Appeals that the apparatus of Patent No. 2 constitutes an improvement over that of Patent No. 1, is more favorable to Petitioner than is indicated by the record in this case. Petitioner is completely unjustified in contending that the Court committed "grave scientific error."

IV.

Petitioner's Fourth Question Does Not Arise from the Record in This Case

As pointed out above in connection with the second question, petitioner has not discovered any new scientific principle, but has merely coined new words to refer to the same principles disclosed in the prior art.

The claims of Patent No. 2 do not recite a new combination. Patent No. 1 like any number of other prior art disclosures of pulse-echo systems, shows the combination of a crystal and an amplifier. Claims 20 and 26 of Patent No. 2 are directed to the substitution of a damped crystal

and a heterodyne amplifier for the respective elements of the No. 1 patent system. The damped crystal performs the same function as the undamped crystal in sending and receiving wave trains or pulses, and the heterodyne amplifier performs the same function as any other amplifier in amplifying signals produced by the crystal. It is alleged that the two substitutions make it possible to measure shorter distances than would be possible from the substitution of either one by itself. However, there is no suggestion of anything new about the manner of cooperation or coaction of the elements. The allegedly improved results are such as would be expected from the improvement of the two weakest components in the chain of components used to generate, transmit, receive, amplify and indicate in a pulse-echo system. A claim to a system or combination is not valid where the system or combination itself is old and the alleged improvement is in one or more of the elements without any change in the mode of operation. *Burt* v. *Evory*, 133 U. S. 349, 358; *Risdon Iron and Locomotive Works* v. *Medart*, 158 U. S. 68, 81.

Petitioner urges in effect that a more lax standard of invention should be applied in complex electronics cases and the like. If this case falls into that category, a more rigid standard should be applied since the radio and electronics field is highly developed and a person having a normal skill in that art has a higher degree of skill than in other arts. As stated by the Court of Appeals for the Second Circuit in *Technidyne Corp.* v. *McPhilben-Keator*, 72 F. (2d) 242:

> "Many patents have been issued in this well-developed field, and, as indicated by the date of their issuance, all are of recent grants. Since the radio art was well developed, the standard of inventive thought to sustain a patented radio tube or circuit necessarily is higher than in the earlier history of the art. *Kintner* v. *Atlantic Communication Co.*, 230 F. 829 (D. C.),

affirmed 240 F. 716 (C. C. A. 2); *Dubilier Condenser Co.* v. *Aerovox Wireless Corp.*, 37 F. (2d) 657, 660 (C. C. A. 2); *Radio Corp.* v. *Dubilier Corp.*, 59 F. (2d) 305 (C. C. A. 3); *Western Electric Co.* v. *Wallerstein*, 60 F. (2d) 723 (C. C. A. 2)."

This Court has recognized that the same principles apply, whether the alleged invention relates to a simple mechanical device or a complex electronic circuit. The question of invention must be judged in the light of what would have been obvious at the time of the alleged invention to a person having ordinary skill in the art to which the subject matter of the alleged invention pertains. For example, this Court in *Detrola Corp.* v. *Hazeltine Corp.*, 313 U. S. 259 held a patent on a complex electronic circuit to be invalid, "since his advance over the prior art, if any, required only the exercise of the skill of the art."

CONCLUSION.

The petitioner raises no question of public interest. The Court of Appeals, in deciding legal questions involved, properly applied principles laid down by this Court which were not altered or modified by the 1952 Patent Act.

The petition should be denied.

Respectfully submitted,

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